What is claimed is:

Claim 1. A coffee roasting apparatus comprising:

a combustion chamber,

a burner for generating heating gases within said combustion chamber,

spaced apart baffles disposed within said combustion chamber to define a sinuous recirculation gas path,

a gas inlet and a gas outlet connected to said combustion chamber,

a roasting oven,

a duct connecting said combustion chamber in communication with said roasting oven for directing heating gases from said combustion chamber to said roasting oven,

said roasting oven including a perforated rotating drum,

a separator,

means for directing the heating gases in said oven and entrained coffee chaff exiting said oven during the roasting cycle to said separator wherein said chaff is separated from the heating gases,

means for directing said heating gases free of any chaff back to said combustion chamber for exhausting

through said gas outlet to atmosphere free of any coffee chaff,

a cooling chamber for receiving the roasted coffee beans when roasting of the coffee beans has ended,

a first phase cooling means connected to said cooling chamber for drawing a cooling gas through said cooling chamber and means recirculating said first phase cooling gas to said sinuous gas path in said combustion chamber for reheating said first phase cooling gas to roasting temperature,

and a second phase cooling means connected to said cooling chamber for drawing a cooling gas through said cooling chamber and means for venting said second phase cooling gas directly to atmosphere free of any coffee chaff.

Claim 2. A coffee roasting apparatus comprising:

a combustion chamber,

a burner for generating combustion gases within said combustion chamber,

said combustion chamber having a recirculating gas inlet and gas outlet exhausting to atmosphere,

baffle means disposed within said combustion chamber to define a sinuous flow path,

a coffee roasting oven,

a connecting conduit connecting said combustion chamber in communication with said coffee roasting oven,

a modulating damper disposed in said connecting conduit,

said roasting oven including a rotating drum and a gas outlet,

a suction fan having an inlet connected in communication with said oven gas outlet,

said suction fan having an outlet,

a separator,

a conduit connecting said outlet of said suction fan in communication with said separator,

said separator separating any coffee chaff entrained in the heating gases being recirculated,

and means for directing the heating gases exiting said separator back to said combustion chamber for venting to atmosphere free of any coffee chaff,

and including a cooling chamber for receiving the roasted coffee beans from said oven upon completion of the roasting period,

means for connecting said suction fan in communication with said cooling chamber for drawing cooling air into said cooling chamber and closing said suction fan out of

communication with said oven, whereby said suction fan effects recirculation of said cooling air to said combustion chamber,

said cooling air being reheated to roasting temperature as said cooling air flows through said sinuous path, and

a second phase cooling means connected to said cooling chamber for drawing a cooling air through said cooling chamber, and

means for venting said second phase cooling air directly to atmosphere.

Claim 3. A coffee bean roasting apparatus having a coffee roasting cycle and a coffee cooling cycle comprising:

a combustion chamber including a burner for generating heating gases,

a roasting oven connected in communication with said combustion chamber whereby heating gases generated by said burner are directed to said oven,

said combustion chamber including an outer housing and spaced baffles disposed within and adjacent said outer housing to define a sinuous gas flow path,

a gas inlet in communication with said sinuous gas flow path and a gas outlet connected to said combustion chamber,

means for recirculating the heating gases flowing through said roasting oven back to said combustion chamber free of any coffee bean residue,

a cooling chamber disposed adjacent said roasting oven for cooling the coffee beans after being roasted in said oven,

said recirculating means including a suction fan,

said suction fan having a fan inlet and a fan outlet,

conduit means connecting said fan inlet in communication with said oven and said cooling chamber,

said conduit means including means for selectively placing said fan inlet in communication with said oven during the roasting cycle and with said cooling chamber during a cooling cycle,

a separator connected in communication with said fan outlet,

said separator having a separator outlet connected in communication with said combustion chamber inlet,

whereby said suction fan effects recirculation of said heating gases from said oven to said separator for separating any coffee bean residue from the heating gas

recirculating back to the combustion chamber to be exhausted to atmosphere free of any coffee bean residue during the roasting of the coffee beans,

said suction fan also effecting recirculation of the coffee cooling medium back to the combustion chamber so that said recirculated cooling medium is incrementally reheated to roasting temperature as said cooling medium flows through said sinuous gas path,

and including means for effecting a secondary cooling of said roasted coffee beans within said cooling chamber,

said secondary cooling means including a second suction fan having an inlet and outlet,

a secondary cooling conduit connecting said inlet of said second fan to said cooling chamber, and

means within said secondary cooling conduit for connecting said inlet of said second fan into communication with said cooling chamber for effecting secondary cooling of the roasted coffee beans whereby the secondary cooling medium is exhausted directly to atmosphere through said outlet of said second fan.

Claim 4. A coffee roasting apparatus as defined in Claim 3 and including means for de-stoning said cooled coffee beans.

Claim 5. A coffee roasting apparatus as defined in Claim 3 and including:

means for aspirating the cooled coffee beans from said cooling chamber,

and a discharge hopper connected with said cooling chamber for receiving said aspirated cooled coffee beans, whereby said cooled coffee beans are de-stoned.

Claim 6. A coffee bean roasting apparatus as defined in Claim 3 and including means for de-stoning said roasted coffee upon completion of said second cooling phase.

Claim 7. A method of roasting coffee beans comprising the steps of:

generating heating gases in a combustion chamber,

directing said heating gases to a roasting oven containing a predetermined amount of coffee beans to be roasted,

tumbling said coffee beans within said oven as said coffee beans are being roasted and separating the roasting coffee beans from its chaff,

directing said heating gases and entrained coffee bean chaffs to a separator to separate the chaff from said heating gases,

and recirculating the heating gases free of said chaff to said combustion chamber for venting to atmosphere free of chaff.

8. A method as defined in Claim 7 and including the steps of:

removing the roasted coffee beans from the roasting oven and placing said roasted coffee beans in a cooling chamber,

effecting the cooling of said roasted coffee beans in two consecutive phases,

recirculating the cooling gases during the first of said cooling phases to said combustion chamber,

and venting the cooling gases during the second of said cooling phases to atmosphere.

9. The method as defined in Claim 7 and including the step of de-stoning said roasted coffee beans subsequent to said cooling phases.

10. The method as defined in Claim 7 and including the step of de-stoning said cooled coffee beans as said coffee beans are transferred from said cooling chamber to a discharge hopper.

11. A method of roasting coffee beans comprising the steps of:

generating heating gases in a combustion chamber,

directing said heating gases to a roasting oven containing a predetermined amount of coffee beans whereby said coffee beans are roasted,

removing said heating gases and any coffee bean chaff entrained from said roasting oven, and

separat6ing the coffee bean chaff from said heating gases prior to said heating gases being recirculated to said combustion chamber.

12. A method of roasting coffee beans as defined in Claim 11 and including the steps of:

removing the roasted coffee beans from the roasting oven,

effecting the cooling of said roasted coffee first by directing cooling atmospheric air over said roasted coffee beans and recirculating said cooling air to the combustion

chamber, and thereafter directing said cooling atmospheric air and venting the same to atmosphere.

13. A method of roasting coffee beans as defined in Claim 12 and including the step of de-stoning said roasted coffee beans subsequent to the cooling thereof.

14. A method of roasting coffee beans as defined in Claim 7 and including the step of de-stoning the roasted coffee beans by aspirating said coffee beans whereby the heavier stones are separated from said roasted coffee beans by gravity.